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Instruments, Apparatus, and Clinical Notes

SUBMUCOSA DISSECTOR*

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This instrument is designed to facilitate exact dissection in those procedures in which habit has led the operator to use the end of the scalpel handle, or scissors, instruments which, obviously, are not uniform in size, shape, or degree of sharpness.

In devising an instrument to clear or expose the submucosa we must clearly recognize three facts, viz.:

1. That when the alimentary tube has been macerated for fourteen hours and scraped, there remains

Fig. 1.—The ends of the instrument. Point A (large end) is beveled and the long edge, properly dulled, is directed against the leatherlike submucosa to scrape it clean without cutting. This is the novel feature in its use.

Point B. (small end) is a spatula dissector 7-32 of an inch wide with dulled end and rounded corners thus avoiding cutting, and facilitating finding the easiest cleavage plane. It also may be used in lifting the peritoneum from the ureter or separating adhesions.

a tissue, leatherlike in consistency, which is the skeleton structure supporting and connecting all the coats of the intestinal wall.

2. In cutting into the bowel wall from the peritoneal side the mucosa and its intimately associated submucous coat everts, or slides over the edge and protrudes around over the peritoneum—eversion of coats.

3. The zone of tissue which is lax enough to permit this sliding or eversion of coats is the loose con-

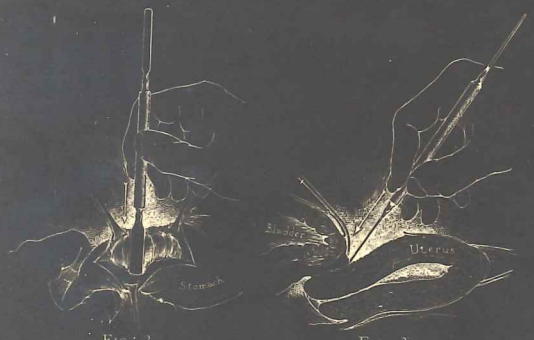

Fig. 2 Fig. 3

Fig. 2.—Showing the use of the instrument in congenital pyloric stenosis. Point A directed against the submucosa removing the hypertrophied pylorie sphincter muscle. Its dull edge will not perforate the duodenal submucosa.

Fig. 3.—Use of instrument in hysterectomy. The edge of point A is directed against the hard uterine muscle tissue thus avoiding injury to the peritoneum and bladder wall.

nective tissue of the submucous layer immediately adjacent to the circular muscle. Since tissues of this zone are chiefly connective in function with no large vessels or nerves it is the natural plane of cleavage of the bowel wall separating the muscles and peritoneum from the subjacent submucous and mucous coats.

Fig. 4 Fig. 5

Fig. 4.—Point B, splitting the bowel wall in enterostomy.

Fig. 5.—Showing use of instrument in cholecystectomy. Point B, separating the gallbladder from its bed and isolating the cystic duct. The clamped cystic duct has been rotated to the left thus exposing the vessels for ligation before they have pierced the gallbladder walls, and while these vessels are still subperitoneal only and easily accessible. Point A is used from above down to clear the gallbladder of liver tissue.

The present instrument in a manner comparable to the back of a knifeblade readily separates the wall at this plane, where eversion of coats takes place.

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A NEW RELOADING NEEDLE FOR THE IMPLANTATION OF RADIUM EMANATION IN CAPILLARY GLASS TUBES

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The trend of radiology clearly indicates that the future will depend on the development of the technic of implantation of radium emanation in capillary glass tubes. But as the marksman must depend on the accuracy of his shooting iron, so must the radiologist be supplied with an implant needle free from mechanical faults. The following is a description of a new needle devised and used by myself to overcome the objectionable features possessed by other implantation needles so far in use.

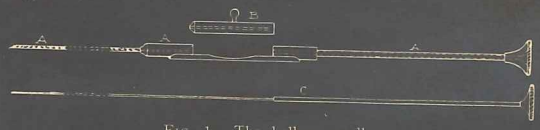

Fig. 1.—The hollow needle.

Fig. 1 illustrates the hollow needle, A, with cartridge B loaded with a radium seed ready to take its position in the chamber of barrel A, while C is the plunger used to force the seed from B through the

Fig. 2.—A schematic sketch of the needle with the cartridge in place.

barrel A and expel it at the needle point into the tissues.

Fig. 2 is a schematic sketch showing the needle complete with the cartridge in place which is pre-

vented from being removed by the plunger being driven up. The plunger C must be withdrawn beyond the cartridge B before this cartridge can be removed for the reloading of the following one.

Fig. 3A shows a cross section of a cartridge

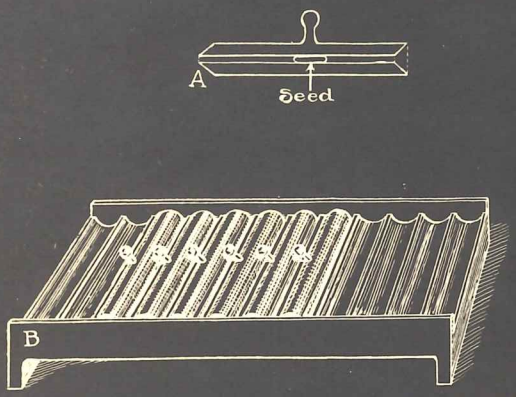

FIG. 3.—A, cross section of cartridge with a capillary glass tube ready to be placed in rack B.

loaded with a capillary glass tube of radium emanation ready to be placed in the rack 3B for sterilization by boiling preparatory to implantation or transportation to the place of operation.

Each cartridge is so made that the concave cone at the upper end acts as a guide to the plunger entering from the needle stock A while the convex cone at the distal end is in apposition with the upper end of the needle barrel A, this forms an uninterrupted channel for the route of the seed.

Fig. 4 illustrates the correct method of introducing several reloading needles in parallel and ordinarily about one centimetre apart with a subsequent deposit of seeds three quarters to one centimetre apart in the puncture channel left on withdrawal of the needle.

The cartridge, loaded with a bare glass tube of radium emanation, is placed in the chamber of the needle which has been inserted to the desired depth in the tissues. The plunger is forced forward expelling the seed at the needle point, the plunger is withdrawn

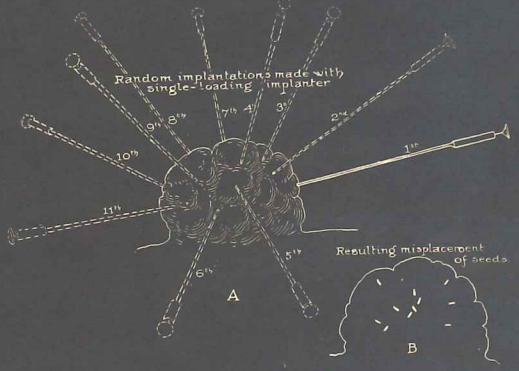

FIG. 5.—Faulty implantation resulting from the use of a single loading implant needle.

and the empty cartridge is removed, another loaded one is slipped into place, the needle is withdrawn about one centimetre and the plunger forced forward expelling a second seed in the puncture channel, etc.

Needle 3 in diagram 4B has been withdrawn the proper distance and the loaded cartridge is being introduced for the implantation of the last seed.

By the introduction of several needles at a time in a specified section of the neoplasm the operator is aware of the relation of the inserted needle points and thus avoids "bunching of seeds" or the deposits of them sparsely or not at all in other sections of the growth. This faulty implantation of a tumor involvement occurs when each seed is deposited by the insertion of an individual needle or "single loading

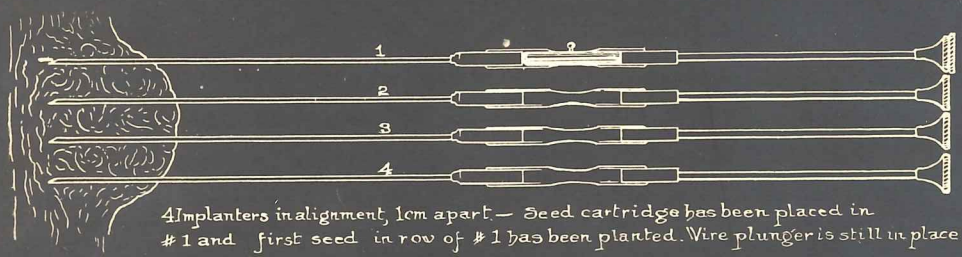
1
2
3
4
4 Implanters in alignment, 1cm apart — Seed cartridge has been placed in # 1 and first seed in row of # 1 has been planted. Wire plunger is still in place

Fig. 4-A

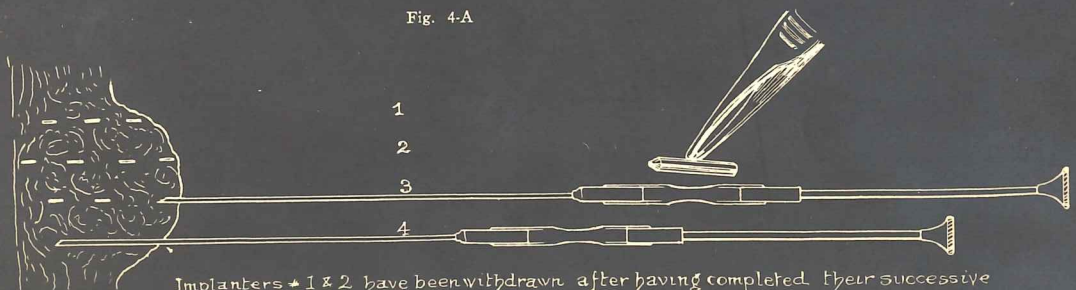
1
2
3
4
Implanters # 1 & 2 have been withdrawn after having completed their successive implantations. Cartridge containing seed is being placed in implanter # 3 for implantation of last seed in 3RD row.

Fig. 4-B

implant needle" as seen in 5A. Should the case call for the embedment of a large number of seeds (in some cases in the neighborhood of eighty or ninety), it is apparent that this greater number of needle punctures is accompanied by excessive trauma, hemorrhage, the more likelihood of introduction of infection slough and possibly serious sequelæ. A faulty distribution of seeds results in sections of the neoplasm and surrounding tissues receiving excessive radiation with a resulting necrosis while other parts will be mildly radiated and left to produce the socalled recurrence (Fig. 5B).

The length of the needle shank for ordinary implantation is ten to twelve centimetres. But different lengths may be attached to suit the case in hand as well as flexible needles for the introduction through instruments more particularly the cystoscope. Several needles with two dozen cartridges are a practical working set.

The history of implantation needles is a brief one. Duane is credited with having been the first to suggest this method of burying radium emanation confined in small capillary glass tubes in the substance of the neoplasm. The deposit of each seed in the tissues required a separate puncture by an individual needle. Flexible and curved needles were devised with various types of handles attached following this, but not until 1923, did anything new in the way of an improvement appear. Muir, at this time, described a needle in which the seeds were placed in a slot in the barrel. Although slot reloading needles are a great advantage over the single seed needle they do not fulfill all the requirements which are essential for implanting a large number of seeds accurately in quick time under adverse circumstances.

ADVANTAGES OF NEEDLE

Advantages of the reloading cartridge needle are: 1, uniform and equidistant distribution of seeds is obtained; 2, the time of implantation is reduced to one quarter or one fifth that required when other types of implantation needles are used—this is especially to be preferred in those cases where a general anesthesia is used; 3, the trauma from the use of the reloading needle is reduced on the average from one quarter to one fifth that produced by the single loading needle; 4, the action is automatic, there is no jamming of seeds (the cartridges are either loaded and sterilized previous to the beginning of the operation or are loaded on a side table by the assistant after they are emptied); 5, there is no chance to drop "live seeds" into the abdomen or other vital locations while reloading; 6, there is no hindrance to implantation when fluid from a cavity or blood from vessel puncture returns through the needle; 7, the more inaccessible neoplasms are implanted with less difficulty; 8, all parts of the instrument are easily sterilized; 9, the metal of the cartridge acts as a filter to protect the radiologist's hands from accumulative radiation effects.

REFERENCES

DUANE, WILLIAM: Methods of Preparing and Using Radio Active Substances in the Treatment of Malignant Disease, and of Estimating Suitable Doses. *Boston Medical and Surgical Journal*, December 6, 1917, page 787.

11 EAST FORTY-EIGHTH STREET.

AN AUTOMATIC TRANSFUSION APPARATUS MADE FROM AN ORDINARY EAR DOUCHE*

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Perth Amboy, N. J.

So many automatic transfusion apparatuses have been devised lately that only special considerations prompt the present report. A very good automatic transfusion apparatus can be made from an ordinary return flow ear douche. Such an apparatus has even certain advantages over the expensive automatic transfusion apparatuses now on the market. It is of all glass construction and operates by means of a single ball valve, instead of by two such valves, as automatic transfusion apparatuses now sold possess. In addition to these advantages, the materials for the apparatus herewith described are readily obtainable

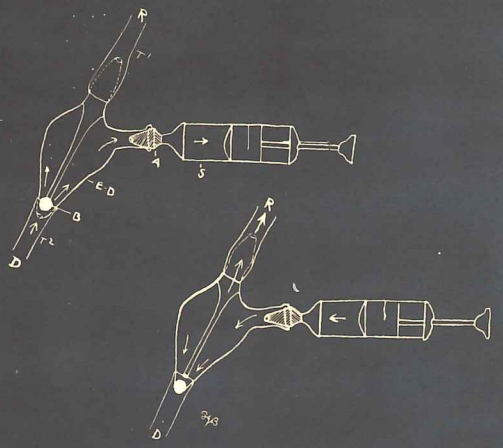

FIG. 1.—E-D, return flow ear douche; A, Luer-Record adapter; B, metal ball; S, 2 C.C. record syringe; T1, rubber tubing; T2, rubber tubing (catheter end)); D, donor; R, recipient.

everywhere; and it can be constructed very simply, in a few minutes.

In addition to the ear douche only a Luer-Record adapter and one ballbearing are required—beside the usual requirements for transfusion, i. e., a hypodermic syringe, two pieces of rubber tubing, needles or cannulas.

The aural end of a return flow ear douche is heated in an alcohol flame, or a Bunsen burner, until it is slightly drawn out. A glass bead or the metal ballbearing is dropped into this opening. The ball should fit loosely. The aural end of the ear douche is now flamed again, until it is drawn out one eighth inch below the metal ball, and the mouth of the tube is flamed until it is sufficiently closed to prevent the metal ball from dropping out. The chief precaution in making the apparatus is to flame the mouth of the ear douche evenly. The Luer part of the Luer-Record adapter is inserted into the outflow tube of the ear douche, and the surrounding glass is then flamed until the adapter is held tightly.

To the aural end of the douche, about six inches of rubber tubing is fitted; and a needle or cannula attached. This is to go to the donor. To the inflow

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